RIVERS AND FLOODS

[River and Flood Division, MERRILL BERNARD in Charge]

By BENNETT SWENSON

During September 1937 moderate floods occurred principally in the rivers of eastern North Carolina and South Carolina, in the Apalachicola and Choctawhatchee Rivers in Alabama and Florida, and in the North Canadian River in Oklahoma. A tabulation of the crest stages appears below.

The floods in North and South Carolina were mainly a continuation of high water during the close of August with a second rise occurring during the second week of September as a result of additional rains. The losses from these floods were as follows: Roanoke River, $47,500; Neuse River, $2,550; and Tar River, $1,650. No damage of consequence occurred in the Saluda and Santee Rivers.

Heavy to excessive rains occurred over the Choctawhatchee and Apalachicola River watersheds on August 31–September 1, 1937, in connection with the passage of a slight tropical disturbance. Precipitation amounts for the 24 hours ending 7 a. m. September 1 for a few selected points in these watersheds were as follows: Newton, Ala., 10.86 inches; Geneva, Ala., 5.52 inches; Elba, Ala., 5.04 inches; Brundidge, Ala., 7.10 inches; Clayton, Ala., 3.02 inches; Troy, Ala., 7.46 inches; Brantley, Ala., 3.16 inches; Greenville, Ala., 2.14 inches; Caryville, Fla., 7.64 inches; and Blountstown, Fla., 4.12 inches.

These rains resulted in a light flood in the Apalachicola River and a moderate flood in the Choctawhatchee River from September 1–10. A total loss of about $62,500 was reported for the Choctawhatchee River while no damage of consequence occurred in the Apalachicola River.

Heavy rains over the upper watershed of the North Canadian River, from September 5–10, resulted in minor flooding in that river. The only material damage that occurred was in Harper County with a total of about $5,500.

An overflow occurred in the Ninnescah River in Kansas on September 8, caused by a heavy rain near Kingman, Kans., on the night of the 7–8th, totaling 5.35 inches. The loss resulting from this flood was estimated at $20,500.

Table of flood stages during September 1937

[All dates in September unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
	Feet			*Feet*	
James: Columbia, Va.	10	1	2	10.6	2
Roanoke:					
Randolph, Va.	21	1	2	21.3	2
Weldon, N. C.	31	1	3	32.9	2
		7	9	37.8	8
Scotland Neck, N. C.	23	[1] Aug. 25	[1] 1	28.9	Aug. 30
		[1] 8	[1] 11	27.5	10
Williamston, N. C.	10	Aug. 30	17	11.6	3
Tar:					
Rocky Mount, N. C.	8	Aug. 26	1	11.1	Aug. 27, 29, 30
Tarboro, N. C.	18	Aug. 30	4	21.9	1
Greenville, N. C.	13	Aug. 31	6	16.2	3
Neuse:					
Smithfield, N. C.	13	Aug. 25	2	18.1	Aug. 29
		7	10	14.5	8, 9
Goldsboro, N. C.	14	Aug. 29	7	18.6	3
Kinston, N. C.	14	2	9	16.1	6
Saluda:					
Pelzer, S. C.	6	7	9	7.4	8
Chappells, S. C.	15	10	10	15.3	10
Santee:					
Rimini, S. C.	12	Aug. 27	19	13.4	3
				13.6	12
		23	26	12.6	24
Ferguson, S. C.	12	Aug. 29	[2] 26	12.9	6
				13.1	14, 15
EAST GULF OF MEXICO DRAINAGE					
Apalachicola: Blountstown, Fla.	15	2	4	15.6	2, 3
Choctawhatchee:					
Newton, Ala.	19	1	3	26.3	2
Geneva, Ala.	23	2	6	31.6	3
Caryville, Fla.	12	2	10	15.6	4
MISSISSIPPI SYSTEM					
Ohio Basin					
West Fork of White: Anderson, Ind.	8	5	8	9.7	6
Arkansas Basin					
North Canadian:					
Woodward, Okla.	5	9	9	5.0	9
Canton, Okla.	6	9	10	6.3	10
Yukon, Okla.	8	8	18	11.3	11
		22	22	8.1	22

[1] Estimated. [2] Fell 0.2 foot below flood stage on 22d.

WEATHER ON THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, WILLIS E. HURD, acting in charge]

NORTH ATLANTIC OCEAN, SEPTEMBER 1937

By H. C. HUNTER

Atmospheric pressure.—The average pressure of the month was slightly above normal over the southeastern portion of the North Atlantic; also the station at Belle Isle, Newfoundland, indicated an average excess of 0.06 inch. More noteworthy, however, were the regions of deficient pressure. The northeastern and north-central areas had decided deficiencies, the greatest noted being 0.18 inch at Reykjavik, Iceland; while near the American coast and the West Indies there was nearly everywhere a deficiency from the Gulf of St. Lawrence southward. At Bermuda the pressure averaged 0.08 inch less than normal.

The extremes of pressure noted in vessel reports are 30.62 and 28.20 inches. The higher reading was reported by radio on the evening of the 28th by the American liner *Scanpenn*, then about 100 miles east of Cape Race, where the meteorological station reported the same reading. Pressures almost as high had been reported by the American steamships *Topa Topa* and *Washington* on the 12th and 13th, respectively, near 47° N., 35° W. The lowest reading was noted by Norwegian motorship *California Express*, heavily involved in the northward-moving hurricane, about 1 a. m., on the 15th, near 20° N., 58° W.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, September 1937*

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland	29.67	−0.09	30.02	9	29.18	28
Reykjavik, Iceland	29.54	−.18	30.39	10	28.67	6
Lerwick, Shetland Islands	29.69	−.15	30.24	11	29.12	15
Valencia, Ireland	29.92	−.07	30.45	11	28.85	16
Lisbon, Portugal	30.05	+.03	30.18	22	29.83	17
Madeira	30.03	+.01	30.19	15	29.82	30
Horta, Azores	30.20	+.03	30.30	20, 23, 24	30.00	29
Belle Isle, Newfoundland	29.95	+.06	30.60	29	29.20	21
Halifax, Nova Scotia	30.02	−.03	30.52	28	29.10	26
Nantucket	30.03	−.05	30.49	30	29.41	11
Hatteras	30.05	−.01	30.38	30	29.72	13
Bermuda	30.00	−.08	30.18	5	29.76	25
Turks Island	29.93	−.05	30.03	7	29.84	24
Key West	29.92	−.02	30.06	7	29.77	13
New Orleans	29.99	+.01	30.23	29	29.77	19

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Cyclones and gales.—There was considerably more storminess than in the summer months. One storm which seems to have originated outside the Tropics deserves special mention. On the evening of the 9th a moderate cyclonic circulation was indicated to the southwestward of Bermuda. The center traveled first toward the north-northwest, then northward till by the morning of the 11th it was a well developed LOW near the 70th meridian in the latitude of Cape May, N. J. After gaining in intensity and in speed of advance, while moving slightly to the east of north, the center was over the northwestern part of the Gulf of St. Lawrence on the morning of the 12th, whence it continued rapidly northward. During the 11th and 12th a steam yacht was grounded near Yarmouth, Nova Scotia, and a trawler on Sable Island, but no loss of life seems to have occurred.

From the 14th to 16th an intense LOW, probably a continuation of that previously described, though now traveling to southeastward, moved from Iceland to the British Isles. On the 14–15th the Danish steamship *Tennessee*, west of the path of the LOW, near 57° N., 24° W., met force-11 winds. This encounter in high latitude and the almost simultaneous meeting of like force to southward of the Tropic of Cancer by the Norwegian motorship *California Express*, mentioned in the synopsis of tropical disturbances, were apparently the first occurrences of force exceeding 10 over any part of the North Atlantic since mid-April. Chart IX, for the 16th, shows this northern storm centered near the British Isles.

Tropical disturbances.—Elsewhere is a synopsis of six disturbances which started within the Tropics. The greatest wind force attained in connection with any of these was force 12, on the 18th and 19th, met by three steamships. The second storm, which passed far to the eastward of Bermuda, was the one causing the hurricane winds mentioned. It is an earlier phase, on the 16th, of this LOW that is shown on chart IX. The same chart includes the third depression, which was of shorter path and less strength; it may be noted over the southwestern part of the Gulf of Mexico.

Chart X, for the 24th, shows the fourth disturbance, which was then centered some distance to the east-southeastward of Bermuda. Its advance thereafter was toward the north-northwest, to reach Nova Scotia on the 26th. During the preceding night the Canadian tanker *Victolite*, about 200 miles to southward of Halifax, encountered force-11 winds in connection with this LOW.

Figure 1 indicates the tracks of all six of these tropical disturbances of the month.

Fog.—The amount of fog from the shores of New Jersey, Long Island, and southern New England northeastward to the Grand Banks and the vicinity of Newfoundland, was much less in September than in August, and the final fortnight of September, particularly, was a period of little or no fog in this area. However, the foggiest 5°-square of the entire North Atlantic region this month was in the Grand Banks section, namely, from 40° to 45° N., 45° to 50° W., where fog occurred on 11 days.

In midocean and to eastward the amount of fog was about the same as during August, some squares reporting more and others less. The week from September 5 to 11 was in general the foggiest part of the month to northward of the 45th parallel from the 35th meridian eastward.

Compared with the expected occurrence of fog in September the present month shows mainly less than usual in western sections; but between the 45th and 50th parallels of latitude from midocean to the coast of France, there generally was more fog than shown by averages of previous Septembers.